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ABSTRACT

This book shares the author's experiences implementing the Core Knowledge Sequence in a small town, offering an understanding of why Core Knowledge has been such a positive experience for learners. As the book describes reasons for using the Core Knowledge Sequence, it substantiates them with authentic experiences from administrators, teachers, parents, and students. The Core Knowledge Sequence, based on the work of E.D. Hirsch, Jr., is a curriculum that describes what students should know and prescribes specific topics for instruction in grades K-8. What students learn gives them a common base for additional learning. The Sequence provides a systematic syllabus of content. It includes topics and subtopics in language arts, world history, American history, geography, visual arts, music, mathematics, and science. It specifies content for half of the school curriculum, with the remaining half chosen by teachers or schools. This book offers suggestions for implementing the Core Knowledge Sequence in a school or district and discusses how to network and find supplementary resources key to school reform efforts. There are four chapters: (1) "Building the Case for Core Knowledge"; (2) "What Is Core Knowledge?" (3) "Introducing Core Knowledge to Your School," and (4) "Inside a Core Knowledge School." Two final sections present "Questions and Answers about Core Knowledge" and "Recommended Resources on Core Knowledge." (SM)

Uncommon Sense

GOOD KNOWLEDGE CLASSROOM

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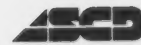
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TIMM A. MACKLEY

Uncommon / Sense

CORE KNOWLEDGE IN THE CLASSROOM

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and Curriculum Development

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*To my wife and three boys.
They are the core of my life.*

UNCOMMON SENSE: CORE KNOWLEDGE IN THE CLASSROOM

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FOREWORD

Hank Aaron once said that "a man's abilities are only limited by his opportunities." How true, and how important it is to keep those words in mind as we choose the educational opportunities we offer children in our schools.

Timm Mackley, superintendent of a small Appalachian school district, took Aaron's words to heart when he persisted in providing his students with opportunities to learn things that his teachers at first did not think were important, or even within the realm of the possible. Furthermore, Mackley didn't want this new curriculum offered to just the most promising students. He saw it as the critical missing piece in the school's program and he insisted that every child have the chance to build a personal treasury of essential knowledge.

The elementary and middle schools under Mackley's direction were among the first in the United States to put into practice the theory supporting Core Knowledge. In the following pages, you'll share the insights gained from using Core Knowledge in the Crooksville schools. What Mackley's modesty doesn't allow him to reveal is his example as a strong instructional leader who modeled for students and teachers what was possible.

Constance Jones
Vice President, Director of School Programs
Core Knowledge Foundation

ACKNOWLEDGMENTS

Thank you to E. D. Hirsch Jr., who captured my attention in 1992. His assessment of elementary and secondary education is astonishingly accurate and refreshingly candid.

John Holdren, vice president and director of Research and Publications, was my first contact at the Core Knowledge Foundation. His gentle humility is characteristic of the Core Knowledge spirit. The people at the Core Knowledge Foundation are pure in heart and selfless in their pursuit of school improvement.

Connie Jones, vice president and director of School Programs, brought her bright enthusiasm for Core Knowledge to Three Oaks Elementary in 1990. Jones now brings that same enthusiasm to schools all across the nation. I am grateful to her for sharing that enthusiasm with me and with our teachers.

Most important, I am indebted to the teachers at Crooksville Elementary School, who so willingly set aside adult comfort and convenience to embrace changes that would help their students. Their hard work and expertise were what made our Core Knowledge journey such a delightful and exciting experience. I am grateful for what they taught me, and even more grateful for what they taught their students.

INTRODUCTION

I was seated in the audience, talking with my wife and waiting for the program to begin. It was a typical setting for an elementary school music program. For every kid on stage, there was an assortment of parents, grandparents, brothers, sisters, aunts, uncles, and friends competing for seats in the audience. It doesn't take long to learn that you need to get to the school 30 minutes early, or you don't get a seat. To pass the time, I was looking through the printed program when I felt a tug on my sport coat. I turned around to see one of our 2nd graders smiling at me. As the school superintendent, I try to spend as much time in the school buildings as I can, and my efforts are rewarded whenever one of the students recognizes and greets me. This particular young man had a special message: "Mr. Mackley," he said, "don't give up the ship!"

I laughed, promised that I certainly would not "give up the ship," and turned to my wife to explain the young man's unusual comment. I had been in the 2nd grade classrooms that morning, telling the students the story of James Lawrence, captain of the *USS Chesapeake*. In the summer 1813, Captain Lawrence and his newly recruited sailors were drawn into a naval battle outside Boston Harbor with a seasoned British crew on board the *HMS Shannon*. The battle was short and decisive. The *Chesapeake* was easily defeated, and the brave Captain Lawrence lost his life. As he lay dying, his final words

were, "Don't give up the ship." These words became the rallying cry of the young United States Navy. Three months after the defeat of the *Chesapeake*, when Oliver Hazard Perry won his great victory over the British on Lake Erie, Captain Lawrence's courageous sentiment was flying on a banner above Admiral Perry's flagship.

Evidently my story impressed at least this one 2nd grader; frankly, it impressed me. I was not familiar with the story until I had occasion to teach about it. The occasion was a study of the War of 1812 going on that week in all our 2nd grade classrooms. I volunteered to teach about the Battle of Lake Erie because teaching gives me an opportunity to interact with the students in a meaningful way. In preparation, I went to our school library where I found a surprisingly good selection of interesting books on the War of 1812, written for elementary children. I read through the chapters about naval battles, copied some of the pictures so that I could show them to the students on an overhead projector, and prepared a mini-lecture on the United States' emerging navy. After the story, I divided each class into two "ships" and we reenacted the Battle of Lake Erie, complete with Perry's triumphant note to General Harrison: "We have met the enemy and they are ours."

Some might say that it is unusual for a school superintendent to be teaching in a 2nd grade classroom. That may be true, but something else is even more unusual. It is unusual for 2nd graders to be studying the War of 1812. It is particularly unusual when all 2nd graders in a school are studying the War of 1812. Such a schoolwide investigation is more commonly reserved for special events and local celebrations. The War of 1812 doesn't fit into either of those categories. Our 2nd graders were studying the War of 1812 because it is prescribed for 2nd grade in the Core Knowledge Sequence. Our elementary school began exploring Core Knowledge in 1992, and within a year we were hooked. It became a transforming experience that affected all the stakeholders in our district—students, parents, teachers, and administrators. It turned out to be an energizing experience that renewed and redirected our educational commitments. Core Knowledge redefined our school district.

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BUILDING THE CASE FOR CORE KNOWLEDGE

Our elementary school began exploring Core Knowledge in 1992; within a year we were hooked. It became a transforming experience, affecting all stakeholders in our district—students, parents, teachers, and administrators. Core Knowledge turned out to be an energizing experience. It renewed and redirected our educational commitments and revitalized our school district.

Core Knowledge is the single most exciting and sensible idea that I have encountered in my more than 25 years in education. It is the vital piece to the school reform puzzle. The Core Knowledge answer to school improvement is sometimes overlooked by the education community because it appears too simplistic, but the approach to curriculum taken by the Core Knowledge Foundation is both straightforward and courageous. The emphasis on subject-matter content is understandable to parents, useful to teachers, and invaluable to students. It fills an educational void that can be detected in any and all schools—large or small, wealthy or poor, urban or rural, public or private. The Core Knowledge Sequence prescribes a knowledge base that is useful for all students regardless of race, socioeconomic status, religion, or ethnic origins.

Because Core Knowledge does not speak to academic skills or methods of instruction, it is occasionally attacked by education theorists. Nevertheless, it is revered by many practitioners. Although I sometimes feel like a voice crying in an educational wilderness, I am not the only Core Knowledge evangelist.

On the Quest for Knowledge

In 1989, I was a high school principal who was trying to help our new music teacher develop a course in general music for secondary students. As a former music teacher, I saw this new course as a great opportunity to fill some troubling gaps in our students' knowledge of music. The traditional approach to general music is to introduce students to music through the three B's—Bach, Beethoven, and Brahms. I was never comfortable with this approach. I enjoy classical music, but I know that many students are easily put off by it, and that they are inclined to quickly dismiss it as the domain of the old and over cultured. I am not against introducing high school students to orchestral classics, but I wanted to take a more contemporary approach to make the course as versatile as possible. If we were going to develop and initiate a new music class, it seemed advisable to make it attractive to our students.

There was a second reason that I wanted to create a music course that included something other than classic, orchestral music. I had a sense that our students were musically illiterate in a way that goes beyond their unfamiliarity with Beethoven's "Fifth Symphony." I suspected that our students were as unacquainted with Rogers and Hammerstein's musicals as they were with Wagner's operas. Most students can't differentiate the sound of Mozart from Tchaikovsky, and many seem equally incapable of recognizing the voice of Frank Sinatra. I'm not a member of the Frank Sinatra Fan Club, but I do recognize his voice and I have an appreciation of his contributions to the entertainment industry. I know that he was the Chairman of the Board. I know that he was an actor as well as a singer, and I know who some of his Hollywood pals were. I even know the color of his eyes.

I know that Frank Sinatra got his start during the Big Band Era, and I know just a little about Big Band music. I can name a few of Glenn Miller's greatest hits, and I know what instrument Benny Goodman played. I also have a basic understanding of the way in which the invention of radio changed the form and intended audience of music, and how it helped individual performers challenge and surpass composers as the primary representatives of the profession. I have a general idea about the early days of rock and roll. I know that Buddy Holly was a rock and roll pioneer, that Chuck Berry's music influenced a lot of people, and that Elvis Presley was among the young performers who used music as the unique expression of his generation.

I also recognize that there is a lot about music that I don't know. Although I was a music teacher, I have no formal training in popular music history. Some of my impressions about popular music are probably inaccurate, and no doubt there are some important gaps in my understanding of music as it relates to the entertainment industry.

It was the music teacher's responsibility to find the resources, do the research, and share the information in some logical order before he began teaching the new music class. I knew it would take a lot of work, but I envied him. My own understanding was somewhat blurry, but I knew that after he did his research, he would be an expert. I wished I had a reason to fill in my own musical knowledge gaps. I planned to visit his class a few times after he got the course started and learn some things. I thought the whole project was rather exciting, and I was confident that our students were going to enjoy it. I knew they would be introduced to many talented people, and I imagined them looking at film clips, listening to old radio broadcasts, and reading about a captivating culture that is largely unknown to the current generation of school children.

High school principals are busy people, and I didn't visit the new class as often as I had hoped. My dreams, however, seemed to be coming true. During one of my visits, the students were watching a videotape of one of Buddy Holly's early

performances. I was intrigued, so I sat down to watch for a while. In the video, Buddy was wearing a coat and tie. The band looked young, neat, and polite. I was most fascinated by the drum set—I could go out today and buy one like it at a local discount store. After the video, I talked with the students about their impressions. We agreed that rock and roll in Buddy Holly's day was certainly not the big business that it is now. When class was over, I felt a sense of satisfaction about the new music course.

At the time I was not entirely sure why I wanted students to know about Frank Sinatra, Glenn Miller, and Buddy Holly. "Maybe it's nothing more than nostalgia," I thought. I was too young to be interested in Buddy Holly when he was alive, and Frank Sinatra is a member of my parents' generation. Still, I believed we were doing the right thing. There was something indefinably important to me about including this information in our students' music education.

By 1992 I was the school superintendent in a small Appalachian community in southeastern Ohio. During the spring of my first school year in that position, I found myself arranging a field trip to Columbus for our senior class. In recognition of the 500th anniversary of Columbus's voyage to the new world, the city of Columbus hosted a celebration. One of our local businesses agreed to fund a trip for our senior class to see the city's major flower show, Ameriflora. Students in our school district didn't get away often because our school district was poor, and we didn't do field trips unless someone specifically provided the funds. This was to be a good opportunity for our kids. A trip to the capital is always a nice event, and Ameriflora was a popular attraction in central Ohio that year.

The high school principal had another commitment, so I volunteered to go along as the chaperone. It was a little chilly the day that we attended the flower show, but the flowers were beautiful and the special events were interesting. On the day that we were there, Bob Hope was filming a television special, and some of our students were able to watch. The next day, when our students were back in school, the high school principal called one of the senior boys aside to ask about the

field trip. "Did you get to see Bob Hope?" he asked. There was a pause while the student pondered the question. Then he responded, "Who is Bob Hope?"

Here we go again. I was surprised that one of our high school seniors didn't know anything about Bob Hope, and I was afraid that he was not unique. I'm not a member of the Bob Hope Fan Club any more than I'm a member of Frank Sinatra's, but I was beginning to wonder if I needed to establish one at our high school. I know that Bob Hope is a comedian. I know that he made a series of films with Bing Crosby and that they are collectively known as the "road shows." I have even seen some of them, and I thought they were pretty funny. More important, I know that Bob Hope faithfully entertained U.S. soldiers through several wars. Because of his selfless commitment, many Americans consider Bob Hope to be a symbol of patriotism.

I found myself beginning to worry that I had stumbled onto something deeper than simple youthful ignorance of the entertainment industry. I began to wonder if these apparent gaps in student knowledge are equally evident in history, science, and literature. When it is necessary to construct a general music course to address deficits in our students' knowledge of popular music, then it is probably fair to predict that our students' knowledge of classical music is at least equally weak. Similarly, high school seniors' unfamiliarity with Bob Hope might suggest they are also unacquainted with Mark Twain. If that is the case, why? Maybe we can dismiss individuals from the entertainment industry as insignificant to a good education, though I'm not necessarily ready to concede that. What if my suspicions proved correct and the problem ran deeper? I'm certainly not prepared to put Mark Twain into the category of trivial pursuit. I wondered, "Just how extensive is our students' knowledge deficit?"

A few weeks later, our high school guidance counselor sent me a newspaper article. She frequently sent me things to read. The articles were usually marked and highlighted, so I knew that she was somewhat discriminate about what she sent, though half my mail came from her. I dutifully glanced over

everything and I sometimes sent her a note in response, just to let her know that I did pay attention. That day's required reading included an article about Core Knowledge schools. I skimmed over it, and then I went back a second time and read it more carefully.

The article described elementary schools that were using a curriculum called the Core Knowledge Sequence. The curriculum is a kind of instructional syllabus, divided into subject areas. What is unusual is that it specifies the topics to be taught in each subject area. I have been a school teacher and administrator for quite some time, but I had never before seen a curriculum that actually gave such specifics. I couldn't help but wonder if Frank Sinatra and Bob Hope were included.

People who have not spent time looking at school curriculum guides may find it difficult to understand why a curriculum that includes subject-matter content is unusual. The public probably assumes that a curriculum guide details the content that will be taught. Not so. Most curriculum guides include a great many statements about desirable problem-solving and thought-processing skills, but they seldom list actual topics of study. Most guides are characterized by sentences that begin with a phrase such as, "The student will be able to . . ." and conclude with another phrase that uses an action verb such as analyze, synthesize, differentiate, predict, sort, or describe. The practical application of these performance objectives is left up to the teacher. In other words, curriculum guides detail academic performance objectives, but they seldom suggest the topics of study in which these performance objectives are to be grounded.

The typical curriculum guide prescribes many skills, but little subject-matter content. A curriculum defined in terms of knowledge, rather than in terms of academic skills, is an unusual concept. I found it intriguing. Like many educators, I had come to accept the industry standard for developing curriculum. For example, I believed that a proper curriculum was characterized by specialists' jargon, crafted by those who were trained in the curricular arts. Over time, I had embraced the idea that school curriculum was best left to curriculum experts.

The emergence of state-mandated curriculum guides and courses of study corresponds with the creation of the curriculum director, a central office position now common in most districts. Curriculum directors are trained to know education terminology and to manipulate and apply that jargon in the prescribed format. Because it would not be good practice for the curriculum director to have exclusive responsibility for the care and feeding of a district's courses of study, committees of teachers are brought together for a short period of time annually or semiannually to develop new courses of study, or to revise and update existing ones. The curriculum director usually chairs the committees and directs the committee members through the tedious process of hammering out revisions for each grade level. Revisions are then printed, bound, and distributed to all classroom teachers in the district. Unfortunately, the guides aren't useful to classroom teachers because they are too generic. It is difficult, for example, to distinguish performance objectives written for grade 3 from those written for grade 6. Any differences are mostly a matter of degree. Teachers often put such curriculum guides on a shelf, and then go back to teaching.

The description of the Core Knowledge Sequence that I received from our guidance counselor suggested this curriculum identifies specific topics to be introduced at each grade level and is not at all concerned with performance objectives. I took the article to our elementary school principal and asked him to read it. His impression was similar to mine, so we decided to investigate a little further, and we called the Core Knowledge Foundation to order a copy of the Core Knowledge Sequence. It arrived in the mail within a day or two. We opened the package and saw what looked like a standard course of study in a plastic binder. The contents were divided by grade level, and each grade was further divided by subject area. Nothing unusual there. When we turned to the 1st grade section and looked under language arts, however, we discovered a list of poems instead of the usual list of desired skills. Several stories were prescribed on the next page, most of them familiar tales: *Hansel and Gretel*, *Jack and the Beanstalk*,

Pinocchio, and *The Princess and the Pea*. Some of the stories I did not know: *How Anansi Got Stories from the Sky God* (a West African folk tale), *It Could Always Be Worse* (a Yiddish folk tale) and *Why the Owl Has Big Eyes* (a Native American legend).

As we looked through the sequence, we discovered that it is full of information that we want our students to know. In addition to literature, this curriculum prescribes specific items to study, including geographical features, cultural groups and civilizations, historic events, works of art, musical selections; mathematical concepts, and areas of science. I began to see that my instincts weren't completely wrong, just a little off the mark. Bob Hope and Frank Sinatra are not in the curriculum, but a lot of important, time-tested information is. Mark Twain is there—*Tom Sawyer* is prescribed at grade 5. Shakespeare is there too—in grades 5 and 6. Other authors include Washington Irving, Daniel Defoe, Robert Louis Stevenson, Louisa May Alcott, and Frederick Douglass. Abraham Lincoln's "Gettysburg Address" is there, as are speeches by Chief Joseph, Sojourner Truth, and Patrick Henry. Kids who attend Core Knowledge schools are learning about the Aztecs, the American Revolution, ancient Greece, the Vikings, medieval China, feudal Japan, and the Renaissance. They are studying the solar system, sound waves, fossil fuels, cell division, the periodic table, and barometric pressure. Students in Core Knowledge schools are introduced to Van Gogh, Beethoven, Alexander the Great, Harriet Tubman, and Florence Nightingale.

In retrospect, I realize that this is what I was looking for when I was a high school principal. My vision at the time was just a little too narrow. I underestimated the problem and understated the solution. I noticed that our kids were inadequately informed about recent popular culture, but I failed to realize how poorly informed they are about their own country's culture and world culture. Familiarity with Frank Sinatra and Bob Hope is useful to those who want to understand the United States in the 1940s and 1950s. But to understand the United States over many generations requires a much broader base of knowledge. To know about the United States is to

know about Galileo, Joan of Arc, Benjamin Franklin, Rosa Parks, and Billy the Kid. To understand the U.S. culture is to be familiar with the books and stories that are part of the culture: *A Tale of Two Cities*, *The Emperor's New Clothes*, *The Iliad* and *The Odyssey*, and *The Legend of Sleepy Hollow*. To be part of the U.S. culture is to be acquainted with the science that has shaped that culture: the research of Watson and Crick, properties of light and sound, the principles of photosynthesis, the classification of living things, the experiments of Thomas Edison. To be an American is to be able to sing "Yankee Doodle," to recognize "Rhapsody in Blue," and to respond to "Stars and Stripes Forever." I have always assumed that our students learn most of these things, but I began to wonder, "Have I assumed too much? Do our kids know these things? Are we teaching them these things?"

What's Being Taught?

As the principal and I asked ourselves those questions, we realized that we didn't know the answers. School principals and superintendents usually don't know exactly what is being taught in their schools. Parents are usually astonished when they hear that we don't know what's being taught, and school administrators are reluctant to admit it, but it is true. In fact, most teachers don't know what is being taught in their schools, either.

Most teachers know only what is being taught in their own classroom. They have only a vague notion, if any, of what their colleagues up and down the hall are teaching. Superintendents, principals, and classroom teachers do have a sense about age-appropriate skills. They know; for example, that reading instruction is a critical part of the curriculum in the 1st grade; that cursive handwriting is usually introduced around 2nd grade; and that students begin multiplication tables at about grade 3. Educators share a general sense of what a 6-year-old child should be able to do, and how much progress that child should have made by the time he is 9. They often have a good sense of the appropriate academic skills for students at various grade levels, but they can say little about a

student's subject-matter knowledge. Why? Educators have no way of knowing what topics the students have been taught. When it comes to awareness of the specific topics of study addressed in an elementary school, chances are that everyone is in the dark.

Consider the topic of electricity. It is possible to talk about electricity with 1st graders, and it is equally possible to study electricity in 3rd grade. Academic skills may be constrained by a student's age and experience, but knowledge can be acquired at any age. Students in 2nd grade and 4th grade can learn about Thomas Edison. There is no natural, age-appropriate time to teach a child about a light bulb. At what grade level should students conduct experiments in simple circuits?

The inescapable truth is that, generally, no person in a school can speak authoritatively about the topics being studied in that building, or about the sequence in which topics of study are presented. Those decisions are left to individual teachers in individual classrooms. Teachers and principals do not know what is being taught in their schools because there is no regulation of subject-matter content.

A few weeks after meeting with the principal, I visited our county library to find more information on Core Knowledge. A gracious librarian helped me find several magazine articles. In a short time I learned that I am not the only one worrying about the gaps in knowledge evidenced by our students. I also discovered descriptions of students who are immersed in exciting and significant topics of study. I decided that the principal and I should talk with the teachers about Core Knowledge.

What Makes Core Knowledge Different?

School reform initiatives have gained popularity and acceptance in recent years, and many new approaches have been proposed to school teachers. Even the most courageous teachers are wary of yet another proposal for improvement that may disappear as soon as the pendulum of change swings in a new direction. Our teachers examined Core Knowledge and compared it with the things that we were already doing in our

classrooms and with other causes being championed by advocates for school improvement. On this balance, our teachers' first impression of Core Knowledge was favorable. They could see that Core Knowledge was unique because it does not endorse a teaching method; it identifies content. It does not describe how to teach; it prescribes what to teach. No new teaching methods are required. No unlearning of old teaching methods must take place. No unfamiliar classroom practices must be mastered. No dramatic change in pedagogy must be effected. They saw that the implementation of Core Knowledge could proceed gradually, alongside their current classroom practices. Those who chose to advance quickly could dive in; those who preferred to ease themselves in could do so at a comfortable pace.

I wouldn't characterize our teachers' initial reactions to Core Knowledge as enthusiastic, but I do believe that they were intrigued. Once teachers have had a little time to answer the question, "What does this mean for me?" they move on to the more important question, "What does this mean for my students?" Our teachers had an intuitive sense that our students' base of knowledge was pretty shaky and that Core Knowledge might be the answer to achieving some stability.

I find that teachers generally recognize and are disturbed by gaps in students' knowledge. They wonder if those knowledge gaps are due to students' poor retention, or if the problem resides in the curriculum or teaching methods. The teachers find that they have to help the students fill in voids in their knowledge that should have been addressed years earlier. Teachers have to review more often than they would like, and they do not have confidence that their students are fundamentally solid in any given subject area. Although teachers may worry about the level of critical thinking among their students, they are more likely to be struck by students' lack of basic knowledge. Their experience parallels my own. Within their area of specialization, teachers recognize that students are not well informed. They attribute students' ignorance to some mysterious weakness in the system, but they can't quite put their finger on the cause. On the day that we introduced Core

Knowledge to our elementary teachers, the light of understanding began to shine.

2

WHAT IS CORE KNOWLEDGE?

Core Knowledge is a curriculum, a systematic syllabus of topics to be studied by students in prekindergarten through 8th grades. It includes topics and subtopics in language arts, world history, American history, geography, visual arts, music, mathematics, and science. Core Knowledge balances the description of academic skills with a prescription for subject-content knowledge. The curriculum is designed to give educators a way of knowing what students have experienced in school and to give students a common foundation on which to build additional learning. Core Knowledge is different from other curriculums in that it describes what a student should know, not what a student should be able to do. Another important part of the Core Knowledge Sequence is that it is intended to be only half a school's curriculum content.

Core Knowledge is not a method of teaching, although it has been linked by some to rigid, teacher-directed instruction and labeled as a traditional, back-to-basics approach to teaching and learning. It has often been portrayed as an approach to education that depends exclusively on lecture and is accompanied by student memorization of names, dates, and facts. Core Knowledge has nothing to do with any of these things: It is a curriculum, not a teaching method. Teachers who use cooperative learning or other group work, independent

research projects, literature-based instruction, multiple resources, authentic assessment, and other techniques find that Core Knowledge is compatible with these sorts of classroom activities. Core Knowledge teachers use these practices throughout the United States.

Core Knowledge is designed to promote equity in education by building a base of knowledge for all students in the early years of school. The knowledge base is intended to be extensive in scope, rather than intensive in application. In the tradition of a liberal arts education, Core Knowledge students learn a little about a lot, rather than a lot about a little. Core Knowledge, however, is not superficial. It is a rigorous survey of the subject matter in language arts, history and geography, visual arts, music, mathematics, and science that a well-educated student should know by the end of 8th grade. The Core Knowledge Sequence is intended to be only half a school's curriculum content, so there is time for a teacher to guide students into other topics.

How Core Knowledge Works

The Core Knowledge curriculum is meant to equip students with the background knowledge they will need as they enter the more specialized curriculum that characterizes the high school experience. Core Knowledge is intended to fill several significant gaps in school curriculum design.

Balances Skills and Knowledge

Core Knowledge balances the acquisition of skills with a corresponding acquisition of knowledge. Many educators believe that schools are good at teaching and testing facts, but that students are not prepared to apply those facts to solving problems. Courses of study are therefore filled with objectives designed to build students' problem-solving and critical-thinking skills. For example, a course of study might expect students studying history to "identify a sequence of events in history," "group historical events on a time line," or "identify cause-and-effect relationships in history." But that same course of study does not require that students study specific historic events or

consider the accomplishments and contributions of specific historic personalities. As a result, students must learn to apply prescribed thought processes to events that they may know little or nothing about. Core Knowledge remedies that circumstance by providing students a reliable knowledge base.

Core Knowledge does not oppose instruction in problem-solving strategies; however, it is based on the belief that to be able to solve meaningful problems, students must first be supplied with knowledge about the domain of study. Skills and knowledge complement each other. It is impossible to have strong problem-solving skills without a correspondingly strong knowledge base. The Core Knowledge Sequence identifies that knowledge base in the core subjects. For example, the American history portion of the Core Knowledge Sequence includes specific events and aspects of history such as the Boston Tea Party, the Louisiana Purchase, and the Underground Railroad; it does not include an objective such as "identify a sequence of events in history." The Core Knowledge Sequence does indicate study of significant people, stories, and issues, including William Penn and the Quakers, Susan B. Anthony and the right to vote, Jackie Robinson and the integration of major league baseball, Cesar Chavez and the rights of migrant workers, Dorothea Dix and the treatment of the insane, Sojourner Truth and women's rights, and Chief Joseph and the ordeal of the Nez Perce Indians. The American history sequence does not include an objective such as "explain how various cultural groups have participated in the development of the United States." As the students learn about specific people and events, teachers can guide them to deeper understanding and teach them to apply problem-solving and other analytical skills to what they have learned.

The Core Knowledge American history sequence is not strictly chronological, but it is logically sequential, incorporating intentional repetition and review with presentation of new concepts and events. For example, 1st graders study Maya, Inca, and Aztec cultures. Then they move forward on the time line to colonization and settlement of North America, ending with the American Revolution. The next year, 2nd graders pick

up with the Constitution and principles of U.S. government and look at the War of 1812, the Civil War, western expansion, immigration, and civil rights. The 3rd grade American history curriculum is largely a review of the two previous years, although the focus is slightly different. The 3rd graders' study of early Americans includes Indian tribes and early explorers, and more time is spent on colonial life prior to the Revolutionary War. In 4th grade, the American Revolution and the forming of the U.S. government are covered in greater depth. Students also spend time studying U.S. presidents and revisit civil rights through the study of various reformers. At grade 5, review topics include westward expansion and the Civil War; immigration and reform movements are studied in grade 6. World War I and World War II, the United States emergence as a world power, the civil rights movements of the 1960s, and the Vietnam era are among the topics covered in grades 7 and 8.

Builds a Strong Foundation of Knowledge

Core Knowledge builds a strong foundation from which students can learn, organize, evaluate, and apply new information as they proceed through school. Many educators believe that problem-solving skills can be acquired and then used by students in a widely applicable manner. For this reason, many curriculums use broad generalities whenever they address the use of knowledge. For example, objectives in mathematics might be to "sort or identify objects on multiple attributes," "identify needed information to solve a problem," or "explain or illustrate whether a problem is correct." The assumption is that the detailed information that makes these skills possible will be more meaningful and more highly valued once students recognize and learn to apply mathematical problem-solving skills.

Core Knowledge does not object to the statement of knowledge-processing skills, but it is structured so that knowledge processing is dependent on knowledge acquisition, not the other way around. For students to think critically about the decision to drop an atomic bomb on the city of Hiroshima, for example, they must have more than raw critical-thinking skills.

They need to know many details about the issues, politics, world circumstances, and mitigating factors that were part of that decision. In other words, they need to know something about World War II. Likewise, to understand why the seasons change, students must have knowledge of the solar system, the orbit of the earth, the earth's relative position to the sun, and the angle of sunlight as the earth travels around the sun. These details are the foundation stones that support thought processes. Core Knowledge identifies and prescribes those details. It does not give generalities about thought processes; it specifically states what a student should know.

Organizes Academic Content

Most educators believe that teachers should know with precision what academic skills have been covered in a student's previous years of school instruction. To help teachers know what skills have been taught, typical curriculum guides include a description of desirable skills for each subject at each grade level. For example, an appropriate academic skill in science for 3rd graders might be to "explore motions of objects and organisms," while an appropriate skill in science for 4th graders might be to "explore qualitative estimates of the rates of change" (e.g., speed, tone, brightness, loudness, temperature). But not many courses of study afford a similar importance to the sequential acquisition of knowledge. Core Knowledge does. The Core Knowledge Sequence presents content in an organized and systematic fashion.

Although Core Knowledge advocates do not oppose describing appropriate academic skills, they believe that subject knowledge should be described precisely at each grade level, with attention given to the content links between grades. For example, the Core Knowledge Sequence in science prescribes topics related to chemistry at every grade level. At grade 1 the science sequence includes the states of matter, the basic concepts of atoms, and the conventions of scientific measurement in both metric and English units. The science sequence for chemistry at grade 4 includes protons, neutrons, and electrons; positive and negative charges; the terms of

observation and measurement such as mass, volume, and density; an introduction to the periodic table; and the basics of solutions, including such terms as solvent, solute, concentration, saturation, and crystallization. At grade 5 students are expected to learn many elements and their symbols; common compounds and their formulas; the properties of metals and nonmetals; the distinctions between chemical and physical changes, and the accompanying characteristics of those changes (e.g., expansion and contraction, condensation, freezing, melting, boiling, conduction, convection, radiation, and distillation). In 6th through 8th grades, students continue to study chemistry and are introduced to chemical bonds, chemical reactions, and chemical equations, as well as the work and contributions of Mendeleev, Dalton, Bohr, and Einstein.

Focuses on Topics of Study

Core Knowledge describes topics of study, not student performance objectives. Proponents of Core Knowledge agree that it is useful to describe what students should know and to define curriculum goals in relation to students' knowledge about a topic or subject of study, rather than in relation to academic skills. Academic skills in language arts, for example, are often described using words such as summarize, identify, interpret, predict, respond, demonstrate, infer, choose, or analyze (e.g., the student will summarize the text, or the student will analyze actions of characters).

Core Knowledge does not oppose describing desirable student behaviors and skills, but it does require that general processes and skills be grounded in a specific domain of inquiry. For example, the Core Knowledge Sequence prescribes specific stories, poems, fables, myths, tall tales, speeches, plays, and novels for each grade level. Kindergartners are assigned 4 of Aesop's fables, including "The Lion and the Mouse" and "The Grasshopper and the Ant," and 18 specific stories, including *The Bremen Town Musicians* and *The Velveteen Rabbit*. In the 8th grade, students are expected to read 17 specified poems, including "Chicago" by Carl Sandburg, and "Do Not Go Gentle into That Good Night" by Dylan

Thomas. 8th graders must also read 5 short stories whose authors range from Nathaniel Hawthorne to Leo Tolstoy; and 2 novels (*Animal Farm* and *The Good Earth*). In addition, the curriculum specifies 4 essays whose authors include Rachel Carson and Martin Luther King Jr.; 1 autobiography, *I Know Why the Caged Bird Sings* by Maya Angelou; and Shakespeare's *As You Like It*.

Specifying titles does not preclude an emphasis on processing skills. In fact, the works prescribed enhance opportunities for students to develop and demonstrate proficiency in language arts and other disciplines. A curriculum defined exclusively in terms of academic processes leaves important questions unanswered. Students are expected to "summarize the text," but no attempt is made to identify an appropriate text. They are expected to "demonstrate knowledge of and ability to think about the relationship among historic events," but there is often no indication of which historic events. Students are required to "use a simple key to classify objects, organisms, and phenomena," but no guidance is provided about which organisms should be studied.

Gives Stakeholders Access to the Curriculum

Core Knowledge is clear, unambiguous, and reasonably free of specialized vocabulary. Too often, educators use jargon such as test-taking mechanics, item formulas, performance assessment tasks, norm-referenced information, open-ended assessments, summative activities, and authentic instruction. Core Knowledge understands that every profession needs some specialized vocabulary, but the Core Knowledge Sequence does not require much interpretation. It is a curriculum that can be understood by parents, teachers, and administrators. The Sequence is a detailed listing of the stories, events, works of art, musical selections, scientific discoveries, and mathematical principles that students should know as a result of their experience in school.

Values Local and Teacher Input

Core Knowledge regulates content in a way that permits

local control and encourages individual teacher initiatives. Some people feel that regulation of content restricts teachers' professional autonomy and violates the principle of local control. Neither individual teachers nor school communities readily accept externally created and externally imposed curriculum. Local control is a precious concept deeply ingrained in the U.S. education system. Allegiance to that concept means that educators are likely to resist any curriculum that looks like an official state or bureaucratically mandated document.

Core Knowledge does not interfere with local control. Schools that adopt Core Knowledge as a component of their curriculum retain local control because they use Core Knowledge voluntarily, believing that the topics it prescribes are necessary to a well-rounded education. The Core Knowledge Sequence is intended to represent only half the subject-matter content that a school district includes in its curriculum. The other half of the curriculum is for teacher preferences and topics of local importance. Almost every state, for instance, requires that state history be part of the curriculum. State and local histories and traditions are part of what teachers and local initiatives must add to the curriculum.

Regulation of classroom content is not an imposition on the professional discretion of teachers. Just as most teachers need and readily accept some structure as they learn how to teach, most teachers welcome some structure about what to teach. Leaving teachers without guidance about classroom content is as irresponsible as leaving them without guidance about effective methodology. To leave individual teachers alone and unsupported places each in a position of overwhelming responsibility. Through various professional development activities, school districts routinely provide guidance about the best teaching methods. School districts should also provide guidance about the topics of study for each grade level.

All schools regulate content to some degree through course titles and textbooks. A course in biology, for example, is not intended to include a study of plate tectonics, the solar system, photosynthesis, electricity, or natural resources; but it would likely include a study of reproduction, heredity, cells, life

cycles, and organisms. Content regulation by course description or title is accepted without question. Textbooks also significantly influence the order in which topics are presented, the relative emphasis that each topic will receive, and the kinds of activities that students will pursue. Yet textbooks continue to be a fundamental and desirable teaching resource in most school districts.

One problem with depending exclusively on the course title and textbook for content regulation is that neither is a common part of instruction in the elementary school, especially in the primary grades. Course titles in the elementary school usually include science, but not biology; social studies, but not U.S. history; language arts, but not British literature; math, but not geometry. Even at the middle school level, it is unusual for a school to offer courses with specific, tightly focused titles. Textbooks are not a dependable regulating factor either, because the content is usually as broad as the course titles for which it is intended and teachers are left to figure out what portion of the text to cover. In the early years of school, when the acquisition of subject knowledge is most important and focused textbooks almost nonexistent, Core Knowledge systemically structures knowledge acquisition. It also provides guidance about what to teach when teachers most need it. Without such guidance, gaps and unintended repetition are certain to occur in the content of the school curriculum. Gaps will ultimately appear as weaknesses in student knowledge.

Ideas About Adopting Core Knowledge

A school district is not compelled to adopt the Sequence in its entirety; some schools look to the Core Knowledge Sequence as a model for creating their own content curriculum. Using the Core Knowledge Sequence without modification, however, has distinct advantages. The Core Knowledge Sequence was developed from the recommendations of many educators and other professionals. The first sequence, created in 1990, was a consensus product of more than 100 parents, teachers, administrators, professors, historians, scientists, multicultural specialists, and curriculum experts from across the country. No indi-

vidual school district could match the ethnic diversity or professional breadth that was part of the initial effort to devise this content-specific curriculum. In addition, the Core Knowledge Sequence has been revised and refined over the last several years, based on the advice of the teachers who are using it in more than 750 schools throughout the United States. If your school district prefers to redo this work and to develop a content-specific curriculum of your own, you may be a step ahead of school districts that adopt a traditional curriculum; however, wholesale adoption of the Core Knowledge Sequence requires fewer resources than developing a custom program. Using the Sequence without alteration also allows continuity from school to school, as well as from district to district.

Using the Sequence in its published form opens up wonderful possibilities for communication between and among Core Knowledge teachers and students. For example, all 3rd grade teachers in Core Knowledge schools teach about ancient Rome. These teachers need good books and other resources about the Romans that are appealing to 3rd grade students. They also need ideas about activities that will reinforce their students' understanding of Roman society and incorporate the skills prescribed in their course of study for history and language arts. Teachers who have these common needs also have a common source of information in their Core Knowledge colleagues.

Students also benefit from the consistency that the Core Knowledge Sequence creates. The problem of student mobility is one that E. D. Hirsch Jr. details convincingly in *The Schools We Need and Why We Don't Have Them*. He describes the plight of a young girl who must enroll in a new school and finds that her classmates, because of their previous year of study in that school, have a different base of knowledge. Her lack of background knowledge puts her at an immediate disadvantage, and she begins to fall behind.

In contrast, a student withdrawing from a Core Knowledge school could move to another Core Knowledge school in a different state and still find familiarity in the educational experience. Even across great distances, schools that use the Core

Knowledge Sequence as the basis for their subject content have a great deal in common. Locally developed content sequences may provide continuity for students who transfer within the same school district, but they cannot help students who cross district borders.

Although Core Knowledge schools have much in common, they are not carbon copies of each other. Core Knowledge schools are more like shoes than like socks. One size does not fit all, but it does make sense to standardize certain characteristics to ensure consistent quality and a good fit. Local control is not forfeited by a school district's decision to structure its content through the use of the Core Knowledge Sequence. Core Knowledge furnishes only about half a school's content emphasis and does not displace any locally mandated skill objectives. Local school districts must tailor the delivery of that content, just as they tailor their delivery of skills. The Core Knowledge Sequence simply replaces fragmented and haphazard approaches to identifying content and gives the subject matter the kind of attention that most schools devote to the description of academic skills.

3

INTRODUCING CORE KNOWLEDGE TO YOUR SCHOOL

Since its beginning in 1990, Core Knowledge has captured the imagination and earned the respect of parents, teachers, and administrators throughout the United States. In less than 10 years it has expanded from one school to nearly 1,000 schools. Core Knowledge is spreading because of the enthusiastic endorsement of dynamic teachers, courageous administrators, and determined parents. It is an exciting learning experience for both students and adults and can be established in a school or school district at minimal expense.

There is no one best way to begin using the Core Knowledge Sequence. Some schools choose to start slowly, implementing it one grade at a time. Sometimes certain teachers volunteer to experiment with the topics in the Sequence, thereby serving as trailblazers for their colleagues. In other cases, all teachers are encouraged to select from the topics prescribed in the Sequence, and then each teacher is allowed to time evaluate the experience.

Advocates should be aware, however, that not everyone welcomes Core Knowledge without reservation. Some skeptical teachers will be won over by the excitement generated by students and colleagues, but a few will remain unconvinced.

Even after others in a school building have adopted it, a few teachers may continue to be critical of the Core Knowledge program. Although they may not object to the existing district course of study, which prescribes desirable skills for students at each grade level, they may object to the Core Knowledge Sequence, which prescribes desirable knowledge for students at each grade level. At first, these teachers may resent the amount of time required in the preparation and presentation of Core Knowledge units, and they may protest their loss of autonomy in picking and choosing all topics of instruction.

Core Knowledge schools report that a majority of teachers are enthusiastic supporters within a year, but enthusiasm is not easily gained. Consensus may be desirable, but it is unrealistic to expect every staff member to buy in before adopting Core Knowledge Sequence or to enthusiastically support it after implementation. School leaders should not wait for unanimous consent from teachers or parents before moving forward; the few should not be allowed to derail the efforts of the majority. The interests of adults are not always aligned with the best interests of students. E. D. Hirsch Jr. admonishes educators to remember that "as we look to teachers to bring out the best in each student, we ask them to recognize the needs of each child as part of a larger community. All communities require some common ground. The community of the classroom requires, in particular, that its members share some common knowledge, because this knowledge makes communication and progress possible." (Hirsch 1997a, p. 208)

First Steps at Crooksville Elementary School

The building principal and I met with the entire staff of Crooksville Elementary in an after-school meeting to introduce the idea of Core Knowledge. We talked about the importance of a consistent approach to content knowledge and expressed our concern that the school curriculum did not provide adequate regulation of content. The teachers agreed with us. They knew that state and locally developed courses of study ensured a certain level of consistency in skill development, but that top-

ics of study at each grade level varied from teacher to teacher.

For example, our district skill objectives in reading at grade 4 require that all teachers provide instruction in summarizing a text, retelling a story, comparing and contrasting story elements, and predicting outcomes and actions. But the choice of stories and texts was determined by the individual teacher. A decision to adopt the Core Knowledge Sequence would mean that, in addition to learning how to compare story elements and predict outcomes, all 4th-grade students would be reading *Robinson Crusoe* and *Treasure Island*. Our teachers saw that this content consistency opened up new possibilities for grade-level thematic units and projects. Core Knowledge didn't require any change in the skills that students were expected to acquire, but it did provide common stories and texts for study. In addition, the teachers would still have many opportunities to choose stories and topics for the remaining half of the curriculum.

Our teachers also recognized that the district courses of study were useless for identifying the subject content that students studied each year, because the district skill expectations for reading in grade 4 were indistinguishable from the skill objectives for reading in grades 3 and 5. Because it's reasonable for 3rd, 4th, and 5th graders to learn how to summarize or retell a story, those academic skill objectives are fine. But academic skill objectives are not useful in determining the specific literature that those students should read. Using the Core Knowledge Sequence helps teachers identify books, poems, and stories that have been or will be part of their students' educational experience. The information about what students have read allows the teacher to discuss specific characters, themes, and plots and to use examples from those stories. Knowing what students have read or will read reduces the chances of unintended repetition, though repetition may occur in the half of the curriculum not specified by Core Knowledge.

Our teachers also agreed there is value in learning the fundamental facts, ideas, concepts, events, places, and people that constitute study in the subjects that they teach. History, for example, is more than the ability to place events on a time line

or to identify cause and effect relationships. History is also familiarity with Charlemagne, Joan of Arc, and Muhammad, as well as knowledge about feudal England, dynastic China, and Islamic Africa. Each teacher could cite several examples of gaps in student knowledge—gaps that the teachers felt should have been filled by an earlier school experience.

We did get a mixed reaction from our teachers at the initial meeting. Some teachers thought that it sounded like a great idea. The idea of organizing classroom topics made sense, and the thought of teaching some new things seemed appealing—some teachers were ready to give it a try immediately. Other teachers were intimidated and threatened by the idea and were worried about the amount of new work that might be required. Teachers who perceive their daily schedule to be fully loaded don't enthusiastically embrace a proposal that adds more to their job description. These teachers have trouble listening because they are so busy thinking of compelling arguments against any proposed change. Most of our teachers, however, simply reserved judgment. They were not inclined to jump in and get going, but they were willing to listen.

The distribution of our teachers' attitudes is probably typical among teaching staffs. Some teachers are trailblazers. When changes take place in a school, the trailblazers lead the charge and provide the model. Without this core of pioneers, it is nearly impossible to implement ideas. These pioneers provide examples for the larger body of teachers who are more practical and want to weigh the costs before they commit. Most teachers are relatively satisfied with the status quo, need a good reason or two before they make changes, and prefer to listen and observe before they participate. Once they are convinced that an idea has merit they are willing to try it, but they expect to see some evidence first. Once these teachers are on board, it is possible for an initiative to take root and grow.

There are always a few teachers who are simply entrenched. They have a comfort zone and they will not move from it unless forced. If forced to move, they will travel only as far as they must, then they seek to establish a new comfort zone incorporating innovations only because there is some

external pressure. If external pressure is not maintained, such teachers fall back and resume their accustomed routines. If the pressure is maintained long enough, the new ideas become incorporated into their comfort zone until those ideas are as difficult to modify as they were to establish.

Overall, our teachers were receptive to the idea behind Core Knowledge, but they also had some practical questions. When our teachers had a chance to look at the Core Knowledge Sequence, they began to ask questions.

Teacher Preparation

Many of the questions our teachers raised were related to preparation. Most elementary teachers are not subject specialists and many topics prescribed by the Core Knowledge Sequence were only superficially familiar to our teachers. Teachers quickly recognize that adopting the Core Knowledge Sequence requires them to review and revisit certain details. Other topics, such as the history of world religions in grade 1, early Asian civilizations in grade 2, and early and medieval African kingdoms in grade 4, may be completely unknown to them and understandably intimidating. Even familiar topics, such as the American Revolution and the Civil War, were not ones that all our teachers felt prepared to introduce in their classrooms. Some preparation was required from all teachers, and none of them was particularly anxious to commit a lot of extra time.

The question of teacher preparation time is universal among teachers who are considering adopting Core Knowledge. One answer is to develop a schedule that includes a common planning time for teachers at the same grade level. A common planning time can be an important element in allowing Core Knowledge to take root in an elementary school. Teachers use the common planning time to share knowledge about good books and other classroom resources, to combine their thoughts about interesting activities and lesson plans, and to encourage each other when the going gets tough.

Our principal was able to provide common planning time for our regular classroom teachers by scheduling art, music,

and physical education so that all the students in a grade level were occupied outside the classroom at the same time. He also took primary responsibility for monitoring the cafeteria, a bold step that allowed teachers to have more uninterrupted lunch time together. Also, we found enough money to hire classroom aides to take over many of the routine duty assignments, such as playground duty, so that teachers could confer about Core Knowledge topics while their students were at recess.

The early stages of implementing the Core Knowledge Sequence can give rise to stress and potential conflict within a school. Even staff trailblazers and pioneers are challenged by the rigor that is characteristic of the Core Knowledge Sequence. Teachers who are uncomfortable with change are more than challenged and may begin to seek reasons to discredit the entire Core Knowledge idea. At this point, faint-hearted administrators may be inclined to back off and choose harmony over educational excellence. Teachers and administrators interested in adopting the Core Knowledge Sequence as part of the school curriculum should be aware that there may be battles to fight.

It is in fighting those battles that a strong building principal can make a big difference. Although the role of the teacher is central to the success of Core Knowledge, good teachers often give up without the support of the building administrator. No effort can succeed without a supply line, and building principals are in the best position to provide morale boosters and logistical support. Some teachers need to be encouraged, even gently pressured, into participating. All teachers need to be given the kind of backing that communicates appreciation and understanding of their efforts. Teachers want to know if their building principal is behind them or not. They take risks and extend themselves if they believe they are part of a schoolwide effort.

It is important that the building principal and central office administration find ways to meet teacher needs, which will vary from school to school and at times will be unique to the individual. Some schools may not be able to provide common planning time, and not all school districts are willing or able to provide extra help. Strategies will differ, but all Core Knowl-

edge schools recognize that teachers need some time for preparation and study. Although help is available through the Core Knowledge Foundation, the Core Knowledge Sequence does not come with prepackaged lesson plans or textbooks. It's not possible for teachers to simply acquire the appropriate materials and stay one chapter ahead of the students. The teachers will become true content specialists, but that goal takes time to achieve. At the initial stages, lack of teacher knowledge is the single biggest obstacle to implementing the Core Knowledge Sequence.

Resources for Core Knowledge

From their questions, it was obvious that our teachers needed to discuss instructional resources. Provided they were willing to explore or review a topic from the Sequence and then teach that topic to their students, our teachers wanted to know what resources we could offer—for both students and teachers. The most obvious need was a book or books on the topics for students to read. Beyond books, the teachers also needed maps, charts, posters, videos, computer programs, and other learning tools to help them involve students in exploring the topics in the Core Knowledge Sequence. No teacher was interested in teaching solely by lecture, and no one on our administrative team wanted to see it done that way.

The Core Knowledge Foundation has made an effort to direct teachers toward good, age-appropriate resources for each topic listed in the Sequence. The most readily available and widely used resource, which is directly derived from the Core Knowledge Sequence, is a series of seven books entitled *What Your [Kindergartner through Sixth Grader] Needs to Know*. These books, edited by E. D. Hirsch Jr. and the staff at the Core Knowledge Foundation, flesh out the topics listed in the Sequence. Although these books are similar to textbooks, they are written for adults and are designed to be read to primary students, or to be used by the teachers to build background knowledge. At the intermediate and middle school levels, this book series could be included among resources provided for student use, although it is not intended as a text.

The book series makes it easy for teachers and parents to find the short stories and poems that are part of the Sequence. The books summarize the historical events, scientific principles, mathematical concepts, artistic highlights, and literature prescribed in the Sequence. A thorough investigation of the topics in each subject area may require a trip to the library, the purchase of additional resources to supplement the book series, or an exploration the Internet. For example, 4th graders who want to read *Treasure Island* or 5th graders who want to study the Civil War will find summaries in the appropriate volumes of the book series, but they should also be encouraged to read original or good abridged versions of the literature and to explore more elaborate resources when studying historical events. To help teachers and students accomplish the necessary research, the Core Knowledge Foundation has developed an annotated bibliography of books on Core Knowledge topics. This resource guide, *Books to Build On*, is available through the Core Knowledge Foundation. The books in this guide represent only a fraction of the age-appropriate books available on Core Knowledge topics, but it is a good place to start when searching for resources.

The best resource guides are Core Knowledge teachers. As more Core Knowledge schools are established across the country, teachers are able to contact colleagues for their experiences with good teaching resources. Teachers in Core Knowledge schools have good reason to trade ideas and share their knowledge: They all teach the same topics at the same grade levels and therefore have similar resource needs. They all want to use effective classroom activities that correspond with the topics they are teaching. Personal and professional preference may determine which resources a teacher might choose to feature or which activities a teacher might choose to employ, but it isn't necessary for every teacher to do a baseline search for resources and activities. Contacting colleagues with experience saves resources and builds collegiality.

The search for resources can be one of the most stimulating and exciting aspects of a teacher's experience with Core Knowledge, but it can also be a time-consuming and inefficient

process. Taking advantage of the insights and experiences of teachers who have been teaching Core Knowledge for several years may help your staff identify the best resources. Experienced Core Knowledge teachers are not only subject-matter specialists, they are resource experts. They are usually familiar with an array of beautifully illustrated books, attractive visual aids, fascinating videos, and high-quality reproductions of primary sources related to Core Knowledge topics. As a result, Core Knowledge can be an influential factor in a school's movement away from exclusive dependence on workbooks, textbooks, and basal readers and toward a resource base that reflects information age opportunities and technologies.

Teachers may be surprised that many wonderful books on their chosen topics are already on their library shelves. Finding the resources and reading the library books may remind them that, even for adult education, children's literature is an excellent teaching and learning resource. An advantage to using the Core Knowledge Sequence is that it spurs teachers into exploring more deeply the world of fiction and nonfiction books written for children of all ages.

As teachers become familiar with the topics assigned to their grade level, they often begin to notice great resources in the most unexpected places. They may pick up useful teaching aids while shopping or traveling, in addition to the materials they find in searching catalogs and educational supply shops. Core Knowledge schools should contact community libraries and explain the Core Knowledge program to the reference librarian. Giving the librarian a copy of the Core Knowledge Sequence and explaining your needs may result in excellent age-appropriate resources for the classroom. Our local librarian was helpful and became accustomed to our calls for help on the themes derived from the Sequence. Supplying a copy of the Core Knowledge Sequence to bookstore managers, who have the incentive of potential book sales, may also result in referrals to the best children's literature on Core Knowledge topics.

Training and Initial Costs

Because Core Knowledge is not a teaching method, minimal training is required. Most of the effort is in identifying and acquiring teaching and learning resources to support the topics listed in the Sequence, providing networking opportunities with other Core Knowledge schools, and scheduling time for teachers to learn about the topics. The financial commitment to Core Knowledge is mostly an initial expense that moderates after a resource base is established and teachers begin to feel secure about teaching the topics. Many school districts can meet these expenses through funds already appropriated for instructional supplies. Core Knowledge expenses are within the typical operating budget of the average school district. In fact, when compared with other school reform initiatives, Core Knowledge is inexpensive.

In 1998, the Core Knowledge Foundation estimated that the first-year material cost for the Core Knowledge Sequence and resource books and materials would average \$200 per teacher. Naturally, the costs of resources and materials varies according to the resources at the school. Initial training costs for that same year averaged \$6,000 per school in training and travel fees. Training is usually conducted by the Foundation on site, at the school district. At the request of an interested school or school district, the Foundation will arrange for experienced Core Knowledge teachers and administrators to explain the theoretical basis for Core Knowledge, to suggest implementation strategies, to introduce the Core Knowledge Sequence, to help align the Sequence with existing locally defined content, and to demonstrate how to write lessons that incorporate state and locally developed skill objectives with Core Knowledge topics. The recommended training session is five days, although the session length is flexible depending on the requirements of the school. Schools are also encouraged to have their teachers attend the annual Core Knowledge National Conference and regional summer workshops.

Making Class Time for Core Knowledge

As a general rule, primary teachers are not accustomed to covering the amount of content prescribed in the Core Knowledge Sequence. Reading and writing skills necessarily occupy a large part of a primary teacher's day. For example, students are divided into reading groups based on their reading ability, and each group is allotted time to work with the teacher. While the teacher works with a reading group, the other students do seat work (tasks that students can complete with a minimal amount of adult supervision). Seat work might include coloring pictures, completing work sheets, reading independently, or completing group projects under the direction of one or more student leaders. A teacher's day in a typical primary classroom includes morning managerial duties followed by a session with the first reading group. After that, there is a session with the second reading group, followed by a break for gym, art, music, or recess. By the time the teacher completes sessions with four or five reading groups, it may be past lunch time and into early afternoon. The afternoon could include some practice on handwriting, some math problems, and perhaps a science demonstration. Incredibly, the day may be gone with only a minimal amount of time dedicated to core subjects other than reading and writing.

Some Core Knowledge schools choose to restructure their primary classrooms and redistribute their time to introduce the topics prescribed by the Core Knowledge Sequence in the earliest grades. A great deal of Core Knowledge work involves reading. At Crooksville Elementary, the teachers found a more productive and efficient way to teach reading by using federally funded reading teachers and classroom aides to divide each classroom into several small-group reading sessions, which met for 30 minutes each day. The teachers abandoned seat work and replaced it with whole-class explorations of meaningful content. Other Core Knowledge schools block time for Core Knowledge topics in the same way that they block reading time. Again, there is no problem with using cooperative learning or other techniques to teach the Sequence, as long as the content is at the center of the learning.

Little by little, Core Knowledge teachers begin to make time for Core Knowledge topics. Initially, instruction may take the form of a story read aloud from one of the Core Knowledge books. Eventually, teachers begin to develop thematic units around Core Knowledge topics. In some cases, all teachers in one grade level teach a thematic unit at the same time so they can compare their experiences. At other times, they may deliberately stagger their Core Knowledge topics so they can trade resources. As time goes on, student products began to reflect the unique emphases of the Core Knowledge Sequence and student work takes on a sense of direction and purpose. Classroom activities and student projects are no longer randomly selected, but are designed around the content-specific focus of Core Knowledge topics. Previously arbitrary units on butterflies and bears are replaced with in-depth explorations of authors, scientists, and historic personalities. The students get excited, and so do the teachers.

Teaching Core Knowledge

Because Core Knowledge is a curriculum, not a method of teaching, teachers are not required to use any particular teaching practices when adopting the Core Knowledge Sequence. Some of the criticisms directed at Core Knowledge are grounded in the false belief that Core Knowledge teachers are expected to abandon learner-centered activities in favor of teacher-directed instruction. Critics imagine a teacher at the head of the class, reciting facts for students to commit to memory through hours of drill and practice. Fortunately, a visit to any Core Knowledge school dispels that notion.

Although the information in the Core Knowledge Sequence could be taught through direct instruction, the topics prescribed by the Sequence are well suited to discovery learning, independent study, and group activities. There is no standard acceptable or unacceptable teaching practice among Core Knowledge teachers. They employ the same methods that teachers in other (non-Core Knowledge) schools use, such as displaying student projects in classrooms and hallways or hav-

ing students demonstrate their knowledge through dramatic productions or oral reports. The difference is that the curriculum may be used to focus these productions, and science projects and laboratory activities are derived from Core Knowledge topics. In other scenarios, students may dress in period costumes to reenact historic events, and concerts and art projects are often directly related to classroom studies.

To begin their adventures with Core Knowledge, teachers should present to students some trial lessons from the Core Knowledge Sequence. Many teachers are initially curious about their students' awareness of the topics prescribed by the Core Knowledge Sequence and might be eager to observe students' level of interest when those topics are introduced in the classroom. It is easy to test the Core Knowledge topics by teaching just one lesson to every class in the building. A 1st grade teacher might choose *Goldilocks and the Three Bears*. A 2nd grade teacher might select the Battle of Lake Erie. William Tell is a potential topic for grade 3, King Arthur in grade 4, and the story of the Trojan Horse for the 5th graders. Most teachers will find that they need to do a little research on their topic. Although they may know the highlights, teachers sometimes find that their knowledge needs to be stronger to link all the details for a cohesive lesson.

Our teachers were encouraged by students' reaction to the lessons they prepared. Students were quite fascinated by the stories prescribed in the Core Knowledge Sequence, and enjoyed the visual aids and dramatic activities that our teachers included in each lesson. The enthusiasm of the students continued as the teachers began to introduce more topics from the Sequence into their daily lessons. Students' enthusiasm for Core Knowledge topics was an influential factor in the staff's decision to continue using the Sequence. Students know the difference between meaningful information and busy work, and they found the topics from the Core Knowledge Sequence to be meaningful and interesting. All the topics contained in the Sequence are examples of enduring knowledge. Our students' curiosity level remained high as we moved from one topic to another, and the teachers were propelled by their students' interest.

Networking

Communicating with colleagues is an important dimension of teaching in Core Knowledge schools. Teachers in Core Knowledge schools can learn a lot from each other by sharing lesson plans, classroom activities, student products, and teaching resources. During the first year of involvement with Core Knowledge, the building principal and teachers should visit a Core Knowledge school in their region. Use the visit as an opportunity to talk with that school's principal and teachers about their approach to using Core Knowledge and about community support for their use of the Core Knowledge Sequence. Although Core Knowledge schools do many things in ways that are unique to their own school, the similarities among Core Knowledge schools are more noticeable than the differences. The student products on display in the halls of a Core Knowledge school are somewhat similar, and it is easy to identify the grade level of each classroom simply by observing the focus of study.

During our first year, the principal and teachers of Crooksville Elementary visited a school in Indiana. Teachers and parents at that school spoke to us about their enthusiasm for Core Knowledge and encouraged us to continue our association. The bond between the school in Indiana and our own in Ohio was astonishing. It was clear that the teachers from each school would benefit from sharing ideas, so we arranged an exchange program. Eventually, several of our teachers traveled to spend a day in Indiana, and some of their teachers spent time at our school in Ohio. As the number of Core Knowledge schools across the country increases, schools seeking to adopt Core Knowledge find that visits to neighboring Core Knowledge schools are increasingly convenient.*

Another important networking opportunity for Core Knowledge teachers and administrators is the annual national conference. The first National Core Knowledge Conference

*To receive information about practicing Core Knowledge schools, contact the Core Knowledge Foundation (see p. 60 for information).

was held in a school cafeteria. In less than ten years it has grown into a major convention attended by thousands of educators from across the country. Since 1991, National Core Knowledge Conferences have been held in San Antonio, Texas; Fort Myers, Florida; Williamsburg, Virginia; Baltimore, Maryland; Denver, Colorado; and Atlanta, Georgia. The national conference reflects the grassroots nature of the Core Knowledge effort. With the exception of some presentations by highly regarded national experts in educational excellence, most of the sessions are conducted by teachers from Core Knowledge schools. The national conference makes it possible for Core Knowledge teachers to gather ideas that are directly applicable to their classrooms. It is also an opportunity to share in the enthusiasm of teachers and administrators whose school programs have been dramatically transformed by the Core Knowledge experience, and to discuss suggestions for improving current practices.

A New Culture

Before long, thematic units drawn from the Core Knowledge Sequence can be developed into elaborate interdisciplinary productions. Dramatic productions, art and science projects, field trips that focus on a theme or topic, invitations to guest speakers, and extended student projects and exhibitions are all natural results of study. As the Core Knowledge curriculum takes root, invite parents and administrators into the classroom to observe demonstrations of student accomplishments. Your hallways and classrooms will begin to overflow with student work until the school takes on an appearance of a museum.

Our experience with Core Knowledge at Crooksville Elementary has completely transformed the culture and climate of our school. The curriculum itself became the most obvious defining characteristic. The staff purchased shirts and sweaters with the Core Knowledge logo, the music teacher wrote a school song describing our Core Knowledge experience, and we fastened a large sign to the front of our building proclaiming our school as Ohio's first Core Knowledge school. Within a year, a contagious enthusiasm for learning swept through the

entire building, and the focus of our curriculum changed from a loosely coupled, fragmented, independent approach to instruction, into a coordinated, schoolwide team concept that revolved around the topics listed in the Core Knowledge Sequence.

4

INSIDE A CORE KNOWLEDGE SCHOOL

The morning is gray as the students make their way into the school building. A light rain is falling and the temperature is in the upper 30s—a fairly typical early winter day in southeastern Ohio. It feels cold enough to snow, but the morning offers only a dreary drizzle. The weather, however, doesn't seem to affect the attitudes of the students. They are cheerful and full of energy as they enter through the main school doors, passing beneath a banner that proclaims, "Crooksville K-8: Ohio's First Core Knowledge School."

The 2nd graders at Crooksville Elementary know the morning routine. Coats and hats go in individual storage boxes in their classroom and lunch tickets are purchased at the concession stand down the hall. Games and activities are available in the classrooms for students who arrive early. The building principal stands in the main hallway intersection outside his office, greeting students as they make their way into the building. The teachers are taking care of last-minute morning details: picking up instructional materials at the copy center, touching base with colleagues, finishing their morning coffee, and accepting hugs from present and former students as they pass in the hallway.

The 2nd graders are talking and playing games in their classroom when their teacher tells them that it is time to begin

regular class. The students quickly put away their games and make their way to their seats. A student of the day is designated and he is invited to the front of the room, where he begins to lead the class in answering the teacher's introductory questions:

"Yesterday was Monday. What day is it today?"

"Tuesday!" the students answer in chorus.

"What day will it be seven days from now?" asks the teacher.

"Tuesday!" the students respond again.

Although the students may not realize it, the calendar activity is part of their math instruction. The students recite the months of the year, identify the current month (December), and calculate which month would be the eighth month in the sequence. They work the calendar in both directions, adding and subtracting days, weeks, and months.

After about five minutes of calendar problems, the student of the day goes to a number board posted at the front of the room and randomly picks a number. He chooses 53. The teacher asks her students to add 10, subtract 10, subtract 10 again, and then add 1.

"What would we need to do to get back to 53?" asks the teacher.

She calls on a student. He suggests adding, but is unsure about the exact number. He offers several suggestions, and the teacher takes each answer and uses the number board to move him toward the target. This is a new twist on the morning math activities and the students are unsure about the routine. They respond more confidently when the student of the day picks another random number (947) and the class begins to recite the numbers in order as he writes them on the board. He writes about a dozen numbers and then the students recite them again, both forward and backward.

The math lesson continues with the class counting by fives from 5 to 100 and back to 5, then by tens from 10 to 330 and back, then by twos from 2 to 100 and back. The student of the day goes to the thermometer, checks the temperature, and reports to the class. The class then does various calculations

based on temperature, and then on money, and then, using the clock, on time. The math questions continue rapidly:

"If it's 10:30 on Austin's clock," asks the teacher, "what time will it be one hour from now?"

"What time was it one hour ago?"

"How many students do we have in our class?"

"How many are absent today?"

"How many does that leave?"

"How many are buying the school lunch?"

"Then how many students must have brought their own lunch today?"

The math lesson lasts about 45 minutes. Not all activities are done orally. The students do graphing activities, look at Venn diagrams, do calculations based on the student of the day's birthday, and use the number line to add and subtract. Everyone is on task, eagerly following the math activities, which move seamlessly from one to another.

A glance around the classroom indicates the importance math instruction in this 2nd grade class. At the front of the room a number line extends across the wall near the ceiling, a number board is featured in the middle of the chalkboard, various student-made graphs decorate the walls, and the teacher uses a large flip chart while leading the students through their math lesson.

There will be other math assignments later in the day. From the students' point of view, morning math is just part of the fun that comes with starting the day. When the math lesson is complete, the students stand and recite the Pledge of Allegiance and then begin to talk about language. The language lesson is based on their study of British history. The Angles, Jutes, Saxons, and Picts figure prominently in the discussion.

"Where did the name 'England' come from?" asks the teacher.

"From the word Angleland!" respond the students.

The discussion of English history leads into the daily phonics lesson. The teacher shows the class a series of flash cards and the students quickly respond in chorus with the word and the phonetic features of each word that have been introduced

over the last several weeks:

"Combination q-u!" they cry. "Vowel digraph!"

The students suddenly stand beside their desks and begin a rap song complete with choreography: "A vowel! Followed by a consonant! Is short! Code it with a breve!" To the tune of "YMCA" they sing, "K-E-I-Y! Let me tell you 'bout, K-E-I-Y!"

The songs are designed to reinforce various phonics rules. They help to simplify the rules and make them less cumbersome. For example, the K-E-I-Y song relates to the rule that if you hear a *k* sound at the beginning of a word, and the next letter is *e*, *i*, or *y*, then the *k* sound is done with a *k*. Any letter other than *e*, *i*, or *y* uses a *c*.

"Tell me about the floss rule, Andrew," the teacher asks.

Andrew responds, "A one-syllable root word with a short vowel, followed by either *l*, *s*, or *f* requires a double letter." (The floss rule explains why "floss" has a double s.)

The phonics lesson continues for nearly an hour. The students discuss the v-c-c-v pattern (vowel, consonant, consonant, vowel pattern) and sneaky-e. The class selects a doctor of decoding to lead them in decoding words on the board; the "doctor" adds diacritical marks to each word throughout the lesson. After a few students have had an opportunity to demonstrate their skills at the board, the teacher distributes a phonics worksheet. The students work at their desks as the teacher checks for accuracy and understanding. The 2nd grade classroom next door can be heard as they also enthusiastically recite and sing their phonics drills. The students' knowledge of phonics is impressive. They understand the mechanics, the vocabulary, and the rules of spelling and word construction at a level that would astonish most parents and teachers.

The students move on to read a poem by Shel Silverstein called "Smart."

"What does the word 'smart' make you think of?" asks the teacher.

A student volunteers, "It makes me think of Athens, Greece."

The student's response is a reflection of the ongoing study of ancient Greece, part of the curriculum for 2nd graders during December. The students sing a song about the Trojan War,

"Beware of Greeks That Bring You Presents" (sung to the tune of the "Battle Hymn of the Republic"). It is one of many songs they sing in the course of their lessons. Other songs include "The Continent Song," and "Ancient China."

The songs are interrupted by the arrival of the reading team. Two reading teachers and two trained aides join the classroom teacher to lead the daily reading lesson. The students are divided into five small groups and begin their lessons. Some of the books are drawn from topics or stories prescribed by the Core Knowledge Sequence (*The Steadfast Tin Soldier*, *The Night Before Christmas*, *The Wonders of the Rain Forest*). Other books are selected because they fit the reading level or the skill development needs of certain students. The reading lesson will last for 30 minutes and then the reading teachers and aides will go to another classroom while this class goes to lunch.

The student work and visual aids on display in the classroom give a hint about the topics and activities that will occupy the remainder of the school day. Posters about Ancient Greece and student products related to Greek gods and Greek architecture are featured inside the classroom as well as in the hallway: a clay model of the Parthenon, a papier-mâché model of the Trojan Horse, and a "Jeopardy" board of answers about ancient Greece. A wide variety of children's books related to Greece and Greek culture is available for the students to read during their independent reading time, or to check out and take home.

The students have constructed their own books about Greek gods. The cover is a color drawing of their favorite god and inside is list of the prominent gods, including Zeus, Artemis, Poseidon, Apollo, Athena, Hermes, Eros, and Aphrodite. Each god or goddess is described and illustrated. One entry says, "Aphrodite's husband is Hephaestus. She was the daughter of Zeus. She was the goddess of love and beauty. Her symbols are the swan, myrtle, dove, and sparrow."

Maps and globes are readily available for afternoon geography lessons about South America. Each student has made a booklet of geographical terms with definitions and original art-

work depicting horizon, coast, boundary, valley, desert, oasis, prairie, and plateau. One student's definition, "A plateau is a large highland plain that rises above the surrounding land."

Suspended from the ceiling are student art projects related to their recent study of China. Additional student products decorate the hall outside the classroom. Pictures of Chinese children, cut out and colored in crayon, hold fact sheets completed by each student: "China has the Great Wall," says one. "The Himalayan Mountains are in China. China's capital is Beijing. New Year is celebrated in China. America is far from China."

Other books made by the students are on display. Each features a section on nouns, including examples of people, places, and things. The students' selections reflect the things that they have been learning in their Core Knowledge lessons, such as Mount Everest, Mount Fuji, Abraham Lincoln, India, Christopher Columbus, Confucius, and the Great Wall.

Down the hall, the 4th graders are starting the second half of their day. Back from the noon recess, they are a little wound up and noisy from running and playing outside. In a short time, however, they begin to refocus on academic tasks. Their classroom shows evidence of the American history topics they are studying. Red, white, and blue mobiles hang from the ceiling in the classroom and out in the hall, featuring Revolutionary War soldiers along with some phrase or quotation associated with an important event such as the Boston Tea Party, the Declaration of Independence, Paul Revere's ride, or the shot heard around the world.

At the front of the room, a large sheet of paper features words to be defined: union, tranquillity, liberty, posterity, ordain, establish. The vocabulary words suggest an ongoing study of the Constitution. The bulletin board on the side wall displays biographies of the founding fathers accompanied by a Revolutionary War time line that begins with the Stamp Act of 1765 and ends with the inauguration of George Washington. Nearby, the 13 colonies are listed on a bulletin board.

Leftover notes on the blackboard indicate that students have been discussing the preliminary steps to the writing of the

Constitution. The Virginia Plan, the New Jersey Plan, and the Great Compromise are listed, as is a description of the U.S. Senate and House of Representatives.

The students begin their afternoon with a quick review of three memorization projects. At the teacher's direction, they rise from their seats, stand beside their desks, and begin to recite from memory:

Listen, my children, and you shall hear
Of the midnight ride of Paul Revere.
On the eighteenth of April, in seventy-five;
Hardly a man is now alive
Who remembers that famous day and year.
He said to his friend, If the British march
By land or sea from the town tonight,
Hang a lantern aloft in the belfry arch
Of the North Church tower as a signal light,
One, if by land, and two, if by sea;
And I on the opposite shore will be,
Ready to ride and spread the alarm
Through every Middlesex village and farm,
For the country folk to be up and to arm.

Almost without pause, the students continue:

We, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish the Constitution for the United States of America.

The final recitation:

When, in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth the separate and equal station to which the laws of nature and of nature's God entitle them, a decent respect for the opinions of mankind requires that they should declare the causes which impel them to the separation.

Not everything in the classroom is related to history. One part of a wall is used for language arts information. It displays sayings and phrases drawn from the Core Knowledge Sequence: "As the crow flies," "Blow hot and cold," "Haste makes waste," "Make hay while the sun shines." The wall also displays a list of books the class has read: *Treasure Island*, *Earthquakes and Volcanoes*, *Magic School Bus Inside the Earth*, *Gulliver's Travels*, *Robinson Crusoe*, *The Legend of Sleepy Hollow*, and *Rip Van Winkle*.

Math activities dominate another part of the wall. The math in grade 4 is clearly related to the math activities being pursued by the students in grade 2. A number line stretches across the front of the room and charts and graphs showing temperature, money, dates, and times are easily accessible.

This afternoon, the 4th graders are having a special science lesson. The three 4th grade classrooms are combining into one large group for a presentation on electromagnets and magnets, delivered by one of the classroom teachers. The students begin by taking out their science portfolios. Each contains several study guides, lists of terms, and notes the students have copied from previous lectures. The teacher gives them a few minutes to copy the new information and the chart shown on the overhead projector, and then she explains the day's experiment.

The large group is divided into groups of four or five students, and each small group is given a bucket that contains a size D battery, a black wire, a large nail, and several paper clips. The teacher selects a student helper and demonstrates the experiment at the front of the room. She attaches the wire to the battery and wraps it 10 times around the nail.

"Now we are going to make a prediction," she says. "How many paper clips do you think I will be able to pick up with my electromagnet?"

The students begin to call out predictions: "One!" "Three!" "Ten!"

Eventually they reach consensus that three is a reasonable estimate. The teacher writes the estimate in the appropriate spot on the overhead display. Then she tries to pick up a paper

clip. It doesn't work. The students are disappointed. The teacher inserts a zero on the chart.

"Well, what should we do now?" the teacher asks. There is no response, so she provides the answer. "Let's wrap it 10 more times," she says.

The students count with her as she wraps the wire 10 more times around the nail.

"Now," says the teacher, "how many paper clips do you think I will be able to pick up?"

The students are optimistic: "Five!" "Ten!" "Twelve!"

They finally agree that five paperclips should be suspended by the magnet. The teacher tries again. No success. The students begin to see the pattern.

"What should we do next?" asks the teacher.

"Wrap it some more!" cry the students. They count as she wraps the nail with the black wire: "One, two, three, four, five, six, seven, eight, nine, ten!"

"Now how many paper clips do you think we can pick up?" asks the teacher.

The students are more realistic this time. Their predictions are informed by experience and observation. "None!" they cry.

But they have some faith in the effect of the additional wire wrappings and eventually agree that one paper clip is a reasonable prediction. The teacher tries again. Success!

Now the students are eager to try this for themselves. Their assignment is to wrap the wire around the nail, 10 wraps at a time, until they have reached 100 wraps. Each time, before testing their prediction, they must estimate the number of paper clips that their electromagnet will gather. The buckets are distributed and the students go to work. The room is soon full of noisy chatter with shouts of triumph as the electromagnets gain strength. As their electromagnets grow stronger, the number of paper clips that the students are able to attract begins to grow.

The classroom teachers walk around the room encouraging the students and sharing their enthusiasm. The special education teacher is among them. Her students are participating as well. They are mixed among their peers in no particular

arrangement. On the basis of ability, there is no way to distinguish one student from another. They are all fully engaged and completely fascinated by their experiment.

After 20 minutes, the teacher calls everyone's attention back to the front of the room for a debriefing. "How do you make an electromagnet? How could you change the electromagnet to make it stronger?" asks the teacher.

The students are now in a position to supply answers based on experience. The teacher helps them to efficiently phrase their observations into the scientific format. They work on hypothesis, observation, and conclusion, and enter their findings in their journals.

The teacher concludes her lesson by reminding students that the next day they will be watching a video about electromagnets featuring Bill Nye, the Science Guy. "If you enjoyed this experiment," says the teacher, "this is a safe experiment to do with your parents at home."

The students begin the process of breaking down their materials, returning them to their buckets, and bringing the buckets to the front of the room.

In the middle school, the 8th grade history class is studying the 1950s. Although it is a history class, the project students are working on is as associated with art and language arts as it is with history. The students are creating brotherhood plates by painting a paper plate and choosing a famous person's portrait to glue on one side. On the other side of the plate, the central feature is a poem. The students have studied several different forms, so they can choose among a sensory poem, an acrostic poem, a free form poem, a ballad, a haiku, a cinquain, a clerihew, or a crossword poem.

As the students enter the room, they go to the materials set out for their use and resume their work at whatever point they finished the day before. There is no need for lecture or direction from the teacher today. Each student already knows what to do. Some students are painting or decorating, but most have moved to one of six classroom computers to work on their poems. One student wrote the following sensory poem:

Freedom is green
It smells like a bag of peppermint
And tastes like a banana cream pie.
Freedom sounds like a church choir
and feels like a cool can of pop on a hot day.

Other students have chosen to write haiku and diamond poetry to reflect the tone and atmosphere associated with the civil rights movement:

Harsh, screaming people
Prove they like segregation,
And despise the blacks.

Lynching
scheming, raging, hateful
stupid, madmen, organized, fair,
undoubting, testing,
equal, even
trial.

When the brotherhood plates are complete, they will hang from the ceiling in the classroom, complementing the student work hanging from the ceiling in the hallway. The hall projects are mobiles with Ohio history themes. Representations of early Indian cultures like the Hopewell, Adena, and Fort Ancient civilizations are included, as are artifacts associated with U.S. presidents from Ohio. Photographs from the life of William Howard Taft, drawings of events surrounding the life of Ulysses S. Grant, and artwork associated with William McKinley are hanging at head level, requiring adults to weave their way through the history of Ohio as they walk down the hall. Next door, outside the math room, another set of mobiles features mathematicians including Archimedes, Euclid, and Charles Babbage.

Around the history classroom are numerous clues to the type of projects that have occupied the students during their study of the 1950s. A video of "I Love Lucy" episodes sits on the teacher's desk, and copies of the most recently graded test are ready to be returned at the end of class. A test question

reads, "Thurgood Marshall once said, 'Like an eating cancer, segregation destroys the morale of our citizens and disfigures our country throughout the world.' Analyze this statement to tell what you think he meant."

On the back wall of the classroom is a 1950s time line surrounded by student representations of the events and cultural artifacts that characterized those years. The 1951 display includes a diorama of a 1950s kitchen accompanied by a representation of a Betty Crocker cookbook. The "Peanuts" comic strip has been reproduced (first published in 1950) as have other products invented in the '50s: the "Superman" TV show, Minute Rice, Kellogg's Sugar Smacks, Frisbees, hula hoops, and McDonald's are all represented. Other projects on display include student reports about Walt Disney, the polio vaccine, the discovery of DNA, and the inclusion of Alaska and Hawaii as the 49th and 50th states.

The students work independently and in groups, designing their brotherhood plates, printing and pasting their poems, and preparing their projects for display. After Christmas break, the class will talk about Martin Luther King Jr. and students can earn extra credit by reciting a portion of his "I Have a Dream" speech. What is not in evidence is the instruction that the teacher has provided on the culture, political climate, and specific events that characterized the cold war and civil rights period of American history. To provide this background information, the teacher used a variety of instructional approaches including lecture, reading and discussion of the textbooks, video clips, and various supplemental resources, including trade books on the events and people that shaped that period of history.

If time permitted, we might also visit the 1st grade, where students have created murals of ancient Egypt, complete with crocodiles made from egg cartons painted green. We might have observed 3rd graders reconstruct the economic and social circumstances that led to the creation of the 13 original colonies. We could examine science projects like the recreation of the DNA helix out of straws and pipe cleaners, or the atomic

models of various elements done with string and minimarshmallows. Julius and Ethel Rosenberg will soon be retried in one of the middle school classrooms, the Civil War will be refought in grade 5, and the Holocaust will be examined in grade 6. We could go to art class, where students are reproducing Renaissance architecture, or to music class, where they are comparing the themes found in "Romeo and Juliet" with those found in "West Side Story."

A visit to a Core Knowledge school will allow you to see wonderful expeditions in pursuit of knowledge. You will witness students being trained to think critically and carefully about the knowledge they have acquired. Most significantly, you will see these things being done consistently from classroom to classroom, from grade level to grade level, and from school to school. The beauty of a Core Knowledge school is not that any single topic of study is superior to any single topic of study in another school. The beauty is in the systematic organization of those topics and in the consistent depth and richness of their pursuit. Core Knowledge schools are vibrant and energetic; they are thought-provoking and challenging; they are exciting and fun. If you really want to understand Core Knowledge, come and visit.

QUESTIONS AND ANSWERS ABOUT CORE KNOWLEDGE

What is left to say about Core Knowledge? For several years I have been privileged to give presentations about Core Knowledge to many teachers, administrators, and parents. Experience has taught me to anticipate many questions and to clarify certain details. But experience has also taught me that however thorough I may be, my audience often needs more information. This chapter is intended to anticipate some of your questions and to guide you in searching for additional information on Core Knowledge. Some of the information is summarized from previous chapters, some of it may be new to you.

Is Core Knowledge the same thing as Core Curriculum?

No. People may mean different things when they use the term "core curriculum," and the words are not interchangeable with Core Knowledge. Generally speaking, core curriculum identifies a certain body of school subjects. In the most narrow definition, these subjects include language arts, science, math, and social studies. In elementary school, core curriculum can also be used to describe fundamental skills such as reading and spelling. In high school, core curriculum might suggest any courses required of all students. Depending upon local inter-

pretation and priorities, core curriculum could encompass certain nonacademic classes, such as physical education or living skills. The fine arts, including music and visual arts, are also considered to have a part in core curriculum in most models.

In contrast to this wide-ranging and flexible definition of core curriculum, Core Knowledge is a specific approach to subject content developed and produced by the Core Knowledge Foundation. The Core Knowledge approach to education is expressly described in the Core Knowledge Sequence. Core Knowledge does not vary from locale to locale, but is common to all schools that adopt the Core Knowledge Sequence as part of their curriculum content.

Core Knowledge describes core subjects and the topics of study that are part of those subjects. For example, science is a core subject; electricity is a possible topic within that core subject. Core Knowledge takes the core subjects of language arts, social studies, visual arts, music, science, and math, and divides them into topics. The Core Knowledge Sequence takes the topics that make up each subject area and evenly and thoughtfully distributes them across the grade levels in a way that eliminates gaps and unintended redundancies. Consistent distribution of topics is especially important in prekindergarten through grade 8, where broad course titles do not help to limit or identify possible topics of study.

Core Knowledge, in other words, is a specific and explicit form of core curriculum. Core Knowledge is more precise than core curriculum; it is more detailed than core curriculum; and it is more useful to those who care about delivering subject-matter content in a systematic and thorough manner.

How does Core Knowledge differ from local or state curriculum requirements and courses of study? Local and state curriculum documents typically focus most of their attention on academic skills, such as critical thinking, and leave decisions about subject content to local or individual discretion. The balance between skills and content varies from state to state and from subject to subject, but is usually weighted heavily on skills. The emphasis awarded to skill development

suggests that content knowledge is either an incidental by-product of skill development or a low-level consideration in the delivery of a good education. Core Knowledge considers content identification to be an important part of school curriculum and seeks balance between skills and content.

In cases where the curriculum is described mostly in terms of skills, the grade-level topics assigned by the Core Knowledge Sequence can be incorporated quickly and easily without disturbing or modifying the prescribed curriculum. Under these circumstances, adopting the Core Knowledge Sequence is more likely to expose inconsistencies in the previous curriculum's topic selection than to violate local or state courses of study.

In the few instances in which the local or state curriculum is content-specific, the topics contained in the Core Knowledge Sequence must be reconciled with those requirements. When it is necessary to reconcile the two, the decision is not a choice between the local curriculum and the Core Knowledge Sequence, but rather an appropriate blend. It may be necessary to adjust the emphasis or time spent on a topic prescribed in the Sequence because that topic has been or will be covered in another grade. It is important, however, to maintain a consistent sequence of subject-matter content from grade level to grade level. The consistency guarantees a solid knowledge base for students and a network of support for teachers in Core Knowledge schools.

What kinds of things will my children be studying, and at which grade levels will that instruction take place? A few minutes spent looking through the Core Knowledge Sequence will reveal that there is nothing unusual, extreme, or unique about the topics. The value of Core Knowledge is not found in its choice of topics but rather in the systematic way that those topics are assigned and presented. All teachers in all schools teach subject-matter content. Without a system of content selection, like that offered by Core Knowledge, teacher choices are driven by arbitrary factors, such as resource availability, topic familiarity, tradition, and personal preference.

When teachers use the Core Knowledge Sequence as a guide to topic selection, the quality of classroom content is improved. Core Knowledge is specific, sequenced, shared, and solid. Dozens of subject-area experts have contributed to the Sequence over several years, and appropriate modifications have been made. One characteristic of all Core Knowledge schools is that thematic units on arbitrary topics are replaced by studies of meaningful, time-tested information and events.

By improving the quality of a school's curriculum, Core Knowledge promotes excellence. By providing an excellent curriculum at the early grade levels, Core Knowledge also promotes fairness. All children benefit from knowledge. Knowledge serves as a student's base for developing academic skills, and it is the key to gaining deeper, clearer comprehension of new information. Core Knowledge ensures that disadvantaged or delayed learners are not victims of low expectations and a watered-down curriculum. Beginning with the primary grades, Core Knowledge takes an organized, sensible approach to building student understanding. As students proceed from grade to grade they share a common academic history. Although they may vary in their ability to comprehend or recall that history, all students are included in the ongoing school conversation.

Core Knowledge does not extend beyond grade 8 for at least two reasons. First, unlike elementary and middle schools, high schools have specific course titles and textbooks to provide some regulation of content. Topic selection in chemistry, U.S. history, or algebra I, for example, is fairly consistent from school to school. Second, an important part the Core Knowledge mission is to help students establish a solid knowledge base in the early years. The belief behind Core Knowledge is that, with this foundation in place, high schools can more effectively direct their students to in-depth studies of selected topics.

Although the Core Knowledge Sequence does not address the curriculum for grades 9 through 12, Core Knowledge does affect a student's preparation for high school. As one high school teacher commented, "I believe that Core Knowledge is

a major organizational line on which to hang a curriculum. How grateful I am for the curriculum in grades prekindergarten through 8 which provides order and suggested topics while still allowing for individual differences among the teachers. When producing my own lesson plans, I can check the Core Knowledge curriculum and know exactly what information is being taught at what grade level. This way I know what needs to be given more in-depth study, what needs to be reviewed, and what can be assumed because it has already been sufficiently covered."

Will this curriculum improve students' performance on standardized competency tests? The Core Knowledge Sequence is intended to build knowledge, not to improve scores on standardized tests. But many Core Knowledge schools do report improved test scores. Data compiled by the Core Knowledge Foundation show improved standardized test scores at Core Knowledge schools in Florida, Indiana, Maryland, Massachusetts, New York, Ohio, Texas, Virginia, and Washington. Although the Core Knowledge Sequence is not aligned with any standardized test, this evidence suggests that extensive content knowledge is useful and generally applicable in testing circumstances.

Is Core Knowledge sensitive to cultural diversity? A look at the Core Knowledge Sequence provides quick assurance that many cultures, many ethnic traditions, and many diverse people are included. Distinguished scholars in the field of multicultural studies have helped develop and review the Core Knowledge Sequence. In addition, Core Knowledge has been successfully used in schools that include diverse student populations.

Schools often shy away from a content-specific curriculum because skill-based objectives are less controversial. Core Knowledge recognizes diversity and operates under the belief that there is an identifiable canon of knowledge from many heritages that all educated U.S. citizens must know.

How does Core Knowledge help reduce the gap between slow learners and high achievers? Some of a student's content knowledge is acquired in the classroom and some from other places. Students derive knowledge from the formal school setting and from their own experiences through reading, observing, traveling, and talking with others. Students who have opportunities to do those things, and who are encouraged to do those things by parents and other adults, informally pick up a lot of content knowledge. Studies confirm a strong correlation between socioeconomic status and performance in school. Children whose parents are knowledgeable and have the resources to share their knowledge tend to do better in school than children whose parents have little formal education and lack the financial resources to provide a rich learning environment for their children, although the lines are not absolutely drawn.

If schools were truly equalizing the differences along the continuum of income and education, this correlation might be eliminated. In a culture where both parents work, where single parents must work full time while raising their children, and where parents for many other reasons cannot provide a child with a rich learning environment, Core Knowledge becomes extremely important.

Formal schooling has the potential to eliminate, or at least reduce, the variations in opportunities students have to learn in informal environments. But when schools focus most of their attention on the development of academic skills and slight the acquisition of knowledge by leaving topic selection to unguided, individual choice, the effect is to compound the differences in student performance.

The biggest reason that students lack information is because they are not taught that information. Such a conclusion may seem obvious, but many fail to recognize the deficits and omissions in the content instruction which characterizes most school curriculums. If there are wide variations in student knowledge due to personal experiences and if content is arbitrarily determined and haphazardly addressed in school, then it should come as no surprise that student knowledge is frag-

mented and incomplete. Inadequate attention to content also helps to explain why schools generally fail to equalize the quality of academic performance between students from enriched backgrounds and students from less advantaged ones.

What implications does Core Knowledge have for students with special needs? Students with special needs benefit from background knowledge in the same ways that all other students benefit. Students with special needs deserve an introduction to Frederick Douglass, an acquaintance with Robin Hood, and an experience with atoms, molecules, and elements. The method by which these topics are introduced, the depth at which these topics are explored, the resources appropriate to the student's level of comprehension, and the classroom activities that reinforce a study of these topics are all matters which might need modification or adjustment. There is nothing exclusive, however, about the topics listed in the Core Knowledge Sequence. Allowing for adjustments in instructional method, these topics are appropriate for students across a wide range of intellectual ability.

Why do some school leaders have reservations about Core Knowledge? School leaders are often skeptical about adopting a content-specific curriculum. The industry standard and the conventional wisdom of the education establishment is to consider any curriculum based on subject-matter content as outdated and inflexible. Many educators believe that as long as students have well-developed thinking skills, they can pick up content knowledge on their own. Not so. Studies in teaching and learning show that it is prior knowledge, not thinking skills, which is the greatest determinant in learning new information. New knowledge develops as a result of the quantity and quality of prior knowledge. The broader a student's base of knowledge, the more successful that student will be in making sense of new information. To be successful in school, every student needs to have knowledge about the subjects of study.

Other reservations may relate to local curriculum needs and

restrictions on teacher choices. Core Knowledge, however, is intended to be only half the curriculum, leaving many opportunities for teachers to make choices and work in local curriculum needs.

What role do parents play in a Core Knowledge school? By looking at the Core Knowledge Sequence, parents see the topics of study planned for each school year. They can reinforce those topics by reading with their children at home. The book series *What Your [Kindergartner through 6th Grader] Needs to Know* is directly tied to the Core Knowledge Sequence and is an excellent home reference. With the guidance provided by the Sequence, parents can further enhance home instruction with materials from the public library or local book store.

Parents can also be an important resource in the classroom. The topics included in the Core Knowledge Sequence often touch areas of expertise or interest among family and friends. When this happens, parents and district residents may be invited to share artifacts, experiences, and insights with students.

As partners in the delivery of the Core Knowledge curriculum, parents can help to provide books and other teaching resources linked to the topics prescribed for each grade. In this way, parent-teacher organizations can have confidence that money raised for school support is directly associated with the school's academic mission.

Who can I contact to learn more about Core Knowledge?

You can learn more about Core Knowledge by contacting the Core Knowledge Foundation, 801 East High St., Charlottesville, VA 22902 USA. Phone: (804) 977-7550. Fax: (804) 977-0021. E-mail: coreknow@coreknowledge.org. Web site: www.coreknowledge.org

The Core Knowledge Foundation is the source for ordering materials, including the Core Knowledge Sequence, which is the basic reference guide for all Core Knowledge schools. The Sequence is a syllabus of topics in language arts, history and geography, visual arts, music, science, and math for prekin-

garten through grade 8. It is a fundamental resource, essential to understanding and appreciating Core Knowledge.

How can I find local Core Knowledge schools? The Core Knowledge Foundation can provide information about the location of Core Knowledge schools. The number of Core Knowledge schools is large enough that most educators can visit a Core Knowledge school without leaving their own school for more than a day or two. Use the information the Foundation gives you to set up an appointment with the school.

Meanwhile, prepare yourself with questions for the building principal and teachers. You'll want to ask the principal about staff and student enthusiasm, school spirit, and attention to learning activities. Ask to meet the teachers and for the opportunity to talk with them and hear about their experiences. Ask to observe a classroom and you'll see how the students and teachers work together as they explore and enjoy Core Knowledge topics. A walk through the halls will give you a chance to see the artifacts representing student work. Decide for yourself if what you see at the school is the kind of setting that you want for students in your own school.

Where can I find books and materials on Core Knowledge? Initially, Core Knowledge teachers had few resources other than the Core Knowledge Sequence to guide them or to assist them in providing classroom instruction. The series of books, *What Your [Kindergartner through Sixth Grader] Needs to Know*, is a helpful reference guide for teachers and parents. The Core Knowledge Foundation publishes additional books and other instructional materials tied directly to the Core Knowledge Sequence. For example, *Core Classics* is a book series that contains abridged versions of the literary classics prescribed in the Sequence. As the Core Knowledge network grows and matures, the Core Knowledge Foundation is continually making it easier for teachers to locate age-appropriate, high-quality editions of the novels and stories listed in the Sequence.

The Core Knowledge Foundation is developing a textbook series. Despite the anticipation of grade-level texts, Core Knowledge is not a textbook-driven curriculum. Teachers are encouraged to find teaching materials from a wide range of sources, including trade books, children's literature, textbooks, and nonprint material. To assist teachers in finding these aids, the Foundation publishes *Books to Build On*, which lists some of the most popular resources used and recommended by Core Knowledge teachers.

The Core Knowledge Foundation can also provide summaries of research conducted in Core Knowledge schools, test scores in Core Knowledge schools, information on how to start a Core Knowledge school, model instructional units on Core Knowledge topics, and information on the history and growth of Core Knowledge across the country. The two books that form the theoretical foundation for Core Knowledge, *Cultural Literacy: What Every American Needs to Know* and *The Schools We Need, and Why We Don't Have Them*, both written by E. D. Hirsch Jr., can also be ordered through the Core Knowledge Foundation. For a list of recommended resources, see page 64.

What about training? The Core Knowledge Foundation is a source for training. Upon request, the Foundation will send teachers from Core Knowledge schools to present a Core Knowledge overview or to demonstrate how to weave Core Knowledge topics into thematic units. These units include the solid subject-matter content included in the Sequence and the academic skills which are the focus of state and local courses of study. The systematic organization of subject-matter content is the starting point for instructional continuity within a school or school district. Through training opportunities provided by the Foundation, interested teachers can learn how to capitalize on the advantages of belonging to the network of Core Knowledge schools.

Where can I join other educators to learn about Core Knowledge? The Core Knowledge Foundation sponsors an annual national conference. The conference is attended by

teachers, administrators, and board members from practicing and prospective Core Knowledge schools around the country. Parents are also welcome. More than 3,000 people attended the 1999 conference. The national conference is the ideal place to get firsthand experience with Core Knowledge practices and to catch the Core Knowledge spirit. Information about the conference, Core Knowledge resources, training and staff development opportunities, and the Core Knowledge Foundation, is available on the Core Knowledge Web site: www.coreknowledge.org.

Are Core Knowledge schools increasing in number? In 1990, there was only one Core Knowledge school in the United States. In 1997, the Core Knowledge Foundation reported 750 operating Core Knowledge schools. Since then, the number has continued to increase. The expansion is particularly impressive because Core Knowledge has spread without the aid of any direct attempt to recruit schools into the network. The Core Knowledge Foundation is a nonprofit organization. Core Knowledge has spread from school to school because of endorsements by those who have experienced it; because it is often advocated by parents and others outside education; and because it has received some favorable coverage in the popular press.

RECOMMENDED RESOURCES ON CORE KNOWLEDGE

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- Gursky, D. (1997, March 15). Rigorous content for all kids. *American Teacher*, 6-7, 11.
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- Meyer, P. (1991, Sept. 15). Florida: Getting to the core. *Life*, 36-39.
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A Conversation with E.D. Hirsch

A House Divided . . . Tradition Versus Change

Print Products

Using Standards and Assessments, *Educational Leadership*, Vol. 56, No. 6,
March 1999

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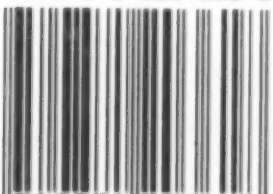
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